

ABSTRACT OF THE DISCLOSURE

A highly sensitive electronic ion cell for the measurement of trace elements in He carrier gas which involves glow discharge. A constant wave (CW) stable glow discharge detector which is controlled through a biased resistor, can detect the change of electron density caused by impurities in the He carrier gas by many orders of magnitude larger than that caused by direct ionization or electron capture. The stable glow discharge detector utilizes a floating pseudo-electrode to form a probe in or near the plasma and a solid rod electrode. By using this probe, the large variation of electron density due to trace amounts of impurities can be directly measured. The solid rod electrode provides greater stability and thus easier alignment.